Transnational and Interdisciplinary Perspectives on Subject Didactics

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Abstracts

Christina Olin-Scheller (Karlstad University)

Subject didactics, School subjects and Teacher education for the 21st Century. A Swedish perspective.

Subject didactics as a field of research in Sweden has grown increasingly stronger in the last decade. In contrast to the traditional research in pedagogy in Sweden, the subject specific research is close to teaching and focuses on what happens in the classroom, as well as the interaction between teachers and students in the teaching and learning processes. Here, a specific focus is on what students are able to learn and in what way this can be considered "powerful knowledge" as well as on teachers' powerful professional knowledge, which is about teachers' ability to teach a specific content to a specific group of students. Powerful knowledge and powerful professional knowledge take the academic and school subjects as a point of departure and consider them as necessary for the learning processes. However, the subject content always must be transformed and how these transformation processes can be described are of a specific interest for the subject specific research field. By reflecting on the outcomes of several interdisciplinary subject specific research projects in Sweden, the paper highlights how research can support the development of teachers' "powerful professional knowledge", become part of the teaching practice and contribute to students' development of powerful knowledge.

Helmut Johannes Vollmer (University of Osnabrück), Martin Rothgangel (University of Vienna)

General Subject Didactics. Development – Theoretical Insights – Empirical Results

General Subject Didactics (GSD) was developed in the context of the German Association for Fachdidaktik (GFD). In view of the fact that there are now more than 30 subject didactics (SDs) assembled under the roof of that organization, the question arose as to what these SDs have in common and what distinguishes them. Also from early on we had the impression that the subject-didactic discourses and the research work done were insufficiently received by General Didactics (GD). But what is the "general" of GD, if for its theory-building the particulars of the SDs do not play a constitutive role? As a consequence, a GFD working group "General Subject Didactics" was founded which came up with first comparisons between five SDs represented by the members of that group. This already led to revealing results, published in Volume 1 of a new book series called General Subject Didactics (Bayrhuber et al. 2017). In a larger extension of this study, these results were differentiated through inclusion of 17 different SDs and their related school subjects: They produced comprehensive self-reports on the basis of six impulses agreed upon before. These empirical data were then analyzed and evaluated in a comparative procedure (Rothgangel et al. 2021).
In our paper, this development and the basic ideas of GSD as well as the main results of this comparison will be presented, with a special focus on issues of self-assurance and generalization and on international connectivity. We will ask what the benefits are from such a comparative approach for the whole of SD and for individual SDs existing. We will also ask how to continue and deepen this research, e.g. by dealing empirically with other relevant issues or by organizing more in-depth follow-up studies. Finally, we will reflect on how to link our findings internationally and strengthen the discourse among different groups of researchers along the lines of our insights.

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Yvonne Liljekvist (Karlstad University), Alexis Stones (University College London), Cosette Crisan (University College London), Kaisa Hahl (University of Helsinki), David Mitchell (University College London)

Developing powerful disciplinary knowledge in mentor-mentee conversations

This paper presents work from a collaboration between researchers at the University of Helsinki, UCL Institute of Education, London, and Karlstad University. Researchers from four subject didactics: Geography, Foreign Language, Mathematics, and Religious Education worked together on a research project, with an overarching research question How can the nature of teachers' powerful professional knowledge be characterised and what are the implications for teacher education policy and practice? We have identified the key role of school subject mentors in the development of Student Teachers across our school systems, as well as the different contexts for teacher education, and how it frames the role of the mentor. Our interest has been directed towards the role of the school-based subject mentor when mentoring Student Teachers in school during their practicums. We ask: What knowledge for teaching a specific subject do (experienced) Subject Mentors foreground when supporting Student Teachers? How is knowledge negotiated between mentor-mentee? And Whose knowledge is negotiated?

Guided by the 2D didactic triangle theoretical construct (Straesser, 2007), an interview protocol was developed to probe into school subject mentors' views of the kind of knowledge, skills and values they aim to instil in their mentees (Student Teachers), and aspects of teaching and learning the specific subject they bring to mentor-mentee conversations were also sought. We conducted 20 qualitative interviews based on a purposeful sample of experienced mentor teachers in each subject and country. Data analysis of the interviews data indicated key aspects in mentoring subject specific teaching during Student Teachers' practicums across school systems and subjects, as well as differences depending on school-based experiences, number of lessons taught, type of guidance, etc., and if theory and practice are intertwined or not in the teacher training program.

We found mentoring knowledge to be highly situated and localised; entangled with emotions, values and capabilities, such that the notion of 'knowledge' for mentoring is itself problematic. Relationships were also found to be significant for the transformation of professional and didactical knowledge. The data also indicated that the Mentor-Mentee-Subject-Students relationships are quite complex, and not well captured when interactions were attempted to be described using the 2D didactic triangle theoretical construct. It emerged, however, that a more nuanced model is needed, with potential to

better explain the complex interactions when mentors and mentees work together with a shared focus of the specific subject content. The potential for this heuristic model, to help structure and ground mentor-mentees conversation in relation to the specific subject taught, will be discussed and exemplified in this presentation.

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*Mikko Niemelä, Jenni Marjokorpi, Amna Khawaja, Mikko Puustinen, Sirpa Tani (*University of Helsinki)

Thinking the unthinkable. Powerful knowledge and the Not-Yet-Thought across curriculum subjects

The purpose of this presentation is to analyze differing interpretations of powerful knowledge from the perspective of subject didactics in history, social sciences, geography, and first language education. These subjects and their points of overlap are important providers of powerful knowledge; they help students understand the systemic interdependencies by connecting spatial and temporal aspects in local and global contexts as well as democratic participation.

We will ask, first, what kinds of similarities and differences there are between curriculum subjects, and second, how the unthinkable and the not-yet-thought is defined within subject-specific contexts. We discuss our findings in relation to sustainable future(s) and democratic imagination. How can subject specific understandings of powerful knowledge help to provide young people tools to envisage alternatives for the future development of the world and societies?

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Brian Hudson (University of Sussex / Karlstad University)

Why no Subject Didactics in England?

In this session I will present the situation regarding subject didactics as an academic discipline in England, or rather the lack of it. I will begin by considering the national policy context and historical development of education in the country over a significant period and have structured my contribution around three key questions. The first is "Why no pedagogy in England?" that was first raised by Brian Simon in his influential paper published over forty years ago. The second question is "Why no didactics in England?" which is inspired by the response from David Hamilton to Brian Simon in his paper "The Pedagogic Paradox (Why no didactics in England)?". I consider the longer-term historical development and the influence of more recent European and international developments in discussing these two

questions. Thirdly, I address the question of "Why no subject didactics in England?" directly. In doing so, I discuss the way in which subject-specific education reflects a 'blind spot' on the part of policy makers, especially since 2010, and how its place in teacher education has become increasingly marginalised during this time. In the discussion I reflect on the competing conceptions of both quality and professionalism between the academic community and policy makers over recent years and on an associated clash of values about the nature of higher education and its role in the professional education of teachers. Furthermore, I draw a comparison with developments in Sweden by considering the nature of Educational Sciences, which have evolved over recent years, and which represent a policy direction that contrasts sharply with that in England over the same period. By comparing the two countries and their policies in this way, the educational consequences and implications for both become clear. Finally, I offer a summary overview of the current situation in England and reflect on the likely consequences should the direction of policy remain unchanged in future years. Essentially this comes down to a policy choice between the development of a teacher education system involving a restricted technical knowledge base for direct instruction as opposed to an extended professional knowledge base for dialogic teaching and learning.

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Martin Rothgangel (University of Vienna), Ulrich Riegel (University of Siegen)

Common Grounds of Research in Subject Didactics. Results of a transdisciplinary Delphi Study in Germany

In Germany, scholars from various subject didactics have been reflecting on common grounds of this particular scientific approach for many years (Bayrhuber et al. 2012; Bayrhuber et al. 2017; Rothgangel et al. 2020). On the one hand, all subject didactics reflect school-based education in their respective academic disciplines. On the other hand, the academic culture in one's own discipline seems to shape the research in the respective subject didactics. Therefore, the question arises whether there are common grounds in subject didactic research across the various disciplines. To answer this question empirically, a Delphi study was launched in Germany in 2021, in which 305 colleagues from 21 subject didactics responded to a quantitative questionnaire and 61 to a qualitative follow-up. This Delphi resulted in a three-dimensional model of basic dimensions of subject didactic research and was able to specify the categories of these dimensions (Rothgangel and Riegel 2021; Riegel and Rothgangel 2022). The paper will describe this model in its details and elaborate its relevance for the commonalities as well as the challenging differences of subject didactic research in Germany. It will also discuss possible outcomes and challenges for the international discourse on interdisciplinary perspectives in subject didactics. It thus contributes to the first point of the conference call, which addresses the level of epistemic quality.

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Ann-Christin Randahl (Gothenburg University), Martin Jakobsson (Karlstad University)

Developing the capacity to transform powerful knowledge in social studies in middle school

Research show that content taught in social studies in primary schools often have weak connections to disciplinary knowledge (Brophy & Alleman, 2009; Kristiansson, 2014), making "powerful knowledge" as a curriculum principle to take students beyond their everyday knowledge (Young & Muller, 2015) weak. This presentation reports a project where social studies teachers worked with researchers to develop their capacity to transform powerful knowledge in their teaching. Choosing migration as content and as a current issue to cope with in a changing and challenging world, a module consisting of five lessons was developed and tested in eight middle school classrooms. The presentation focus on the work preceding the tests from the position of Legitimation Code Theory (Maton, 2014). This framework offers tools to analyse different dimensions of organizing codes in knowledge practices. We have used the tools from two dimensions, Semantics and Specialization. Through this two-dimensional code analysis the aim has been to highlight how academic language connects to everyday language and how epistemic relations connects to social relations when developing the transformation capacity. The data consists of four recorded and transcribed meetings, two about knowledge-building and two about joint constructions of student-exercises.

Preliminary findings show that the researchers play an important role to establish semantic links to powerful knowledge by repacking the content, using concepts, and connecting concepts to another. For the transformation process, there also seem to be important what didactic questions that are raised. A strong focus on how, when and for whom turns the conversation into practical problems where more of an everyday language is used, resulting in limited possibilities to establish links to the specialized content in question. Rather, a focus on what, what is, and why appear to facilitate a transforming process. In the joint construction of exercises, the teachers and the researchers take different positions. The teachers take the students' own experiences as point of departure, while the researchers take a notion, a concept or a model as starting-point. Recurrently, the researchers' position is accepted by the teachers. How teachers' professional development can be supported is discussed in relation to these findings.

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Tomáš Janík, Jan Slavík, Tereza Češková, Petr Najvar, Eva Minaříková (Masaryk University, Brno)

On the content transformation in the classroom: 3A Methodology as a tool for analysing and improving teaching and learning

Within subject didactics, teaching and learning (TL) is considered as content transformation. Transformative processes are expounded upon using various terminologies in different explanatory frameworks: transformation (Deng, Gericke, Hudson), conversion (Bruner), translation (Schwab), recontextualisation (Bernstein), transposition (Chevallard), omstilling (Ongstad), reconstruction (Duit) and others. Nonetheless, they share a common Deweyan notion of "psychologizing the curriculum" – it is assumed that there are epistemic correspondences between cultural knowledge and student experience, which allow the structure of cultural knowledge to be "psychologized," i.e., brought closer to the student experience through educational transformations. Gericke et al. (2018, p. 429) characterized the transformation as an "integrative process in which content knowledge is changed into knowledge that is taught and learned through various processes that take place outside and within the educational system at the individual, institutional, and societal levels." However, the same topic can also be viewed from the opposite transformational perspective. Not as an approximation of scientific knowledge to ordinary human experience, but as a development of human experience towards science. We call this interchange as transformational turn.

In this spirit, we developed our own theory and methodology focused on the qualitative analysis and evaluation of classroom TL with a focus on content transformation (Janík et al., 2024). We proposed a methodological model referred to as the Deep Structure of Teaching and Learning Model. The model is driven by the aim to develop a specialized language (semantics) for the teaching profession at the intersection of theory, curriculum, and practice. It acknowledges the practical effort of teachers to maintain coherence – integrity – between educational content, curriculum aims, and activities of students and teachers organized around learning tasks within the "prepared" learning environment. We call our approach the 3A Methodology, where "A" refers to the three steps of which it consists: annotation (brief summary of the analysed situation), analysis (detailed look at the situation from the perspective of quality evaluation), alteration (suggested changes in the situation, critically justified with regard to the integrity of TL).

In our paper, we will offer a synopsis of the main concepts of the theory of content transformation. In the next step, our experience with 3A Methodology will be reflected. It will be shown, how we – on the basis of multiple case studies – arrived at didactic formalisms and didactic excellence as instances of low and high quality of teaching and learning. We will contextualise our approach within the European tradition of didactics and Anglo-American tradition of pedagogical content knowledge.

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Ping Ren (University of Guangzhou), Hilbert Meyer (University of Oldenburg)

An Intercultural Research on Chinese Language Teachers' Professionalization in Germany – Based on a Review on Classical Schools of Chinese Didactics

At present, the professionalization of Chinese teachers of Chinese as a foreign language in Germany and in all of Europe is confronted with various complex educational challenges and problems. At the same time there is a steady increase of students learning the Chinese language at schools in Germany, and the number of Chinese language teachers has also been on a steady rise. But an urgent problem is lack of local Chinese language teachers who have professional instructional competence and are familiar with German educational schemata.

It can be seen that traditional Chinese educational schemata and cultural values have great impact on these teachers' professional beliefs and their professional behavior. Because of this, the educational situation these teachers are confronted with in Germany has created challenges and problems for their professional development. They should therefore become more competent to deal with intercultural conflicts and tensions in class.

In order to describe the Chinese teachers' professional development in the German educational environment, I have selected three Chinese language teachers at two Hamburg schools for case studies to depict the adaptations, transitions and transformations of their professional experience. Focusing on the influence of different educational schemata on these teachers' professional development, I chose two English language teachers at two schools in Wuhan, China, as a comparative group.

By describing the teachers' professional biographies and their management of various challenges in my case studies, I can investigate the relation of their prior biographies and their new professional practice concerning the intercultural contextual influences.

In particular, my study applies the framework of Bildungsgang research (research on learner development and educational experience) on Chinese language teaching, and this allows me to develop a new perspective for the study of these Chinese teachers' professional development. I focus on the teachers' self-regulated development and their sense constructions on the one hand and their professional developmental tasks as they can be related to their educational experience on the other hand. Generally speaking, my

case studies may help to shed light on understanding the individual difficulties and challenges that Chinese teachers are faced with in their overseas teaching environments. The study's findings and recommendations therefore are of significance for the future design of teacher training for Chinese language teachers in Germany and in other European countries.

Gülcan Inci Eren, Jana Karoline Brandt, Joanna Maxem (University of Trier)

Powerful knowledge, epistemic quality and plurilinguialism in German language classes?

The paper presents a practical example in which the feasibility of epistemic quality in German language lessons was examined. The question we asked was: "How can plurilingualism be used for epistemic quality in German lessons for conveying content and developing skills?" The focus was on the plurilingualism that the students already have and how this can be activated. Basically, through a simple change of perspective, the focus was placed on the individual and thus a self-directed learning collective was created.

Ultimately, it was possible to ensure that the change from usual monolingual and monocultural, normative didactics to effective, student-generated learning can lead to epistemic quality, powerful knowledge and more democratization in German language classes. The diverse linguistic repertoires of the students are individual abilities that can be made fruitful for learning content and developing skills. For this purpose, the results were categorically evaluated based on the collected data, which are presented in this article.

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Kenneth Nordgren and Yvonne Liljekvist (Karlstad University)

Building infrastructures for collegial planning and preparation: Interdisciplinary perspectives on subject didactical practice and school organisation

Planning and preparation (PaP) is vital for high-quality in teaching and thus for student learning (Hattie, 2008; Mertens et al., 2010). Nevertheless, the infrastructure to support PaP is often poorly developed. In Sweden, as in many other countries, PaP is mainly the responsibility of individual teachers, disconnected from the local school organisation (OECD, 2020). Indications of deficiencies in such infrastructures include fragmentation of time for planning, absence of functional collaborative settings, lack of routines and relevant input of new knowledge (Nordgren et al.,2019; 2021).

In the project Collegial Planning and Preparation as Subject-didactical School Improvement (Swedish Research Council 2022-2024) we explore how teachers in a collegial setting plan and prepare lessons in

order to transform knowledge into relevant teaching activities. This project brings together the fields of subject didactic (e.g. Hudson, 2016) and school development (e.g., Jarl et al., 2017). We argue that PaP is a key to school development and that subject specific knowledge and skills associated with knowledge transformation processes in PaP should be at the centre of teacher professional development (cf. Carlgren, 1999; Deng, 2018) to meet the challenges having creativity, literacy, and critical thinking as central aspects of teaching.

In our presentation we will discuss comparative perspective on how possibilities and restrains in the collegial setting affect the subject-oriented planning teams. We draw on longitudinal data from planning team meetings (audio recordings, planning documents, etc.). Subject specific, as well as generic variation in the planning teams' activity enhance our knowledge on how such designated communities can support PaP. The data allows us to systematically compare PaP in paradigmatic and non-paradigmatic subjects. The aim is to develop empirical and theoretical knowledge about a didactical practice as well as about its role in the local school organisation.

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Gérard Sensevy (University of Western Brittany)

From The Joint Action Theory in Didactics to Cooperative Engineering as a Cooperative Design

In this talk, I first present the current state of the theory of joint action in didactics (JATD). I highlight what can be called the cultural turn of this theory, which places the emphasis on culture, in the words of Charles Péguy: "The teacher ensures the representation of Culture", which JATD attempts to generalize. In this first part, I draw out some of the consequences of this cultural turn, particularly in the way the theory conceptualizes intelligence, representations and their relationships.

In the second part of this paper, I show how the recent development of JATD has led us to the construction of cooperative design that we call cooperative engineering. I then describe the main principles on which Cooperative Engineering is based, and the specific epistemology it implies.

In the third part of this presentation, I give some examples of research in cooperative engineering, which give concrete form to some of the conceptual elements of the previous parts. These examples involve mathematics, languages and the arts, at different school levels.

In a brief conclusion, I summarize the main points of the presentation and outline the JATD research program.

Jesper Sjöström (Malmö University)

Subject Didactics as a Knowledge Field

Subject didactics can be seen as an autonomous discipline for the teaching profession (e.g. Cramer & Schreiber, 2018; Schneuwly, 2011). Schneuwly (2011, p. 282) writes: "Subject didactics is organised as autonomous research or disciplinary fields that are necessarily pluridisciplinary". However, these different specialities for different subject areas have in common an interest in teaching and learning of contents (powerful knowledge, values, critical thinking, action competence etc.) (e.g. Kansanen, 2009; Vollmer, 2021; Wickman, 2012). As a field subject didactics has contact points to: (1) other educational sciences such as general didactics, pedagogy, and educational studies, (2) the school subject / subject area, and (3) teaching practice (e.g. Sjöström, 2018; Cramer & Schreiber, 2018). The main purpose of (subject) didactic research is to strengthen the theoretical basis for school practice (e.g. Deng, 2021).

Many subfields of subject didactics have in recent decades evolved from experience-based methodology to quite independent research fields. This applies, for instance, to "science didactics" ("naturvetenskapernas didaktik" in Swedish and "Science Education" in English), which in Sweden has developed since the mid-1980s. I am especially at home in Science Education, but am also very interested in general aspects of subject didactics (e.g. Nielsen, 2011; Sjöström, 2017, 2018; Vollmer, 2021).

In 2017, at the Nordic subject didactics conference (NoFA), I first presented a framework with ten analysis areas to be used to analyze and develop subject didactics in whatever subject area (Sjöström, 2017, 2018). These ten areas are about: 1) subject didactics research; 2) meta-perspectives on the subject area; 3) meta-perspectives on the school subject; 4) culture and traditions of the school subject; 5) students' relationship to the subject (area); 6) teachers' (and student teachers') relationship to the subject (area); 7) common praxis in the school subject: teaching, learning and assessment; 8) alternative didactical choices; 9) "cross-curricular goals" (e.g. eco-reflexive Bildung, sustainability etc.; see for instance Sjöström et al., 2016); and 10) didactic modelling (see for instance Sjöström, 2022). In the presentation, I will elaborate on a revised version of the framework based on recent developments in the knowledge field.

Tracy Bloor (University of Franche-Comté)

What is to be seen? Didactic descriptors and their *seeing-as*

This submission is a reflection on the difference in focus between the subject didactic field of English as a foreign language in secondary schools in France, compared to that of the Joint Action Theory in

Didactics (JATD) branch of general didactics. The paper will seek to show how the subject branch of English secondary school didactics relies on a different seeing-as (Wittgenstein, 1953/1997) to that of the JATD branch of general didactics (Sensevy, 2011; CDpE, 2019; ADFE, 2023).

In France, a didactic exam is part of the annual national competitive exam for future teachers: the Epreuve Disciplinaire Appliquée (EDA) of the CAPES (Certificat d'Aptitude au Professorat de l'enseignement du Second degré). This didactic exam can be taken as a reliable indicator of the seeing-as of the subject of English didactics in secondary schools in France. Candidates of the English CAPES in the EDA exam need to have sound knowledge of the field of British or American literature and civilisation and the set national secondary school teaching programmes. They should demonstrate their ability to devise a coherent teaching sequence by transposing (Chevallard, 1991) documents from British or American literature and civilisation for use in the classroom and demonstrate how they target cultural, linguistic, and pragmatic learning objectives with appropriate language activities for the CEFR level of language ability targeted. Classroom didactic terms such as "anticipation", "mise en commun" (pooling) "trace écrite" (written trace) or "final task" facilitate descriptions of lesson plans to present a sequence. This paper argues that the seeing-as of the community of practice surrounding this exam, that is to say, what the practitioner is led to see, is essentially methodologically-constructed knowledge: that is knowledge based on the methodological ability to manage the various components of a sequence in relation to English studies programmes, set national programmes for secondary schools, CEFR and classroom practice didactic descriptors.

In contrast, the JATD branch of general didactics seeks to render visible the construction of knowledge in situ in semiotic environments (Sensevy, 2011; CDpE, 2019; Bloor, 2020). In the JATD framework, the ability to share a representation is of primary importance and dependent on the condition of encountering phenomena in a semiotic and a dialogic environment (Sensevy, Gruson & Forest, 2015). This means the focus, of the field includes not only verbal exchanges and written texts, but also other semiotic resources such as gestures, eye gaze, prosody, and proxemics. Attention is given to the identification and analysis of language-in-use in such environments, and the shared representations they might foster in classroom life, that is to say "how participants construct knowledge in educational events" (Kelly & Licona, 2018, p.12; Bloor & Santini, 2022). This paper argues that the seeing-as of this community, that is to say, what the practitioner is led to see, is in situ knowledge construction.

The paper will seek to show how the JATD branch of general didactics focusses on the social processes which determine knowledge whereas the focus of subject didactics of English for secondary schools is that of the Cartesian subject.

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Angela Piu (University of Valle d'Aosta),Cinzia Angelini (University of RomaTre)

Simulation games for the development of summarizing skills in primary school (Workshop)

The aim of the workshop is to present educational interventions based on collaborative simulation games to develop summarizing skills among primary school pupils. These games have been conceptualized, developed, and tested as part of the research project "Today it's my turn to sum up" (Angelini, 2016; Piu, 2017; Piu, 2022; Piu et al, 2022).

The games are designed as a way to entertain primary school students while identifying the key information in a narrative text, to stimulate the development of related skills and competences, including the gradual appropriation of summarizing skills. They are structured around constraints that take into account the intrinsic cognitive load associated with the complexity of each task, so as to facilitate guided and gradual learning (Sweller, 2003; Schotz & Kurschner, 2007; Piu 2017); they also allow students to actively work with the texts, with a view to constructing meaning and encourage cooperation, discussion, and interaction among peers, with the teacher's mediation, which helps the readers to explain the factors that led them to identify key information (Piu 2022; Kintsch & van Dijk, 1978). .

The workshop participants will be introduced to one of the simulation games. The goal is to familiarize them with the features of the game and how these are related to the theoretical and methodological framework that informed the development of all the simulation games.

Attendees will then be invited to reflect on and discuss the teaching and learning process in the simulation game and how it is related to the structure and unfolding of the game, with a particular focus on the discourse of the children (Piu, 2022). The aim is to provide participants with an experiential appreciation of how children can construct together the meaning of the text based on textual cues, having the opportunity to take part in an appealing activity that prompted them to develop their own interpretative schemes, which they could then reflect upon and revisit during the debriefing.

Finally, attendees will debate the transferability of the simulation game technique to the settings in which they themselves teach, and discuss potential new lines of inquiry.

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Laura Tamassia (UCLL University of Applied Sciences & Hasselt University)

Teaching 'in between': a case study of young Flemish secondary school teachers coping with tensions in their didactic practice

Many European countries are currently facing a shortage of teachers and a high teacher drop-out, including Flemish Belgium (European Commission, 2020, 2023). This complex issue is often looked at from the perspective of the (lack of) attractiveness of the teacher career (OECD, 2019; Macdonald, 1999), or from the point of view of organisational psychology, see for instance (Madigan, Kim, 2021; Thomas et al., 2018). Behavioural issues with today's youth are often also mentioned (Williams, 2018). The reasons given by (Flemish) teachers for having quit the job have also been studied (Struyven, Vanthournout, 2014). In this context, a didactic perspective is rarely taken, although didactics is central to the teaching profession.

In this presentation we will discuss a case study focusing on young Flemish teachers experiencing pressure or dilemma's that are essentially didactical. We will discuss how these teachers make specific didactical choices and accept certain compromises, finding a balance in their tense situation through didactics. This 'balancing act' allows them to cope with the tension in their didactic practice and to stay (for the moment being) in the teaching job.

The cases are selected from a broader study, in the context of which we have collected, analysed and visualised diverse 'tensions' experienced by both senior and young teachers. The underlying working hypothesis of the study is that the complexity of today's teachers' practice causes various forms of emotional tension. This 'tense practice' is to be considered inherent to the teaching job, and the capacity of the individual teacher to 'handle' tensions in a concrete way is crucial to the resilience of the teacher and his/her capacity to stay in the profession. By doing so, we take a positive perspective by studying not teachers who quitted the job, but teachers who manage to stay in the job 'in between' different tensions.

The complexity of the context into which teachers have to function today, implies that tense teachers' practices need to be studied in their own complex context from different perspectives. The actor-network theory is a theoretical framework allowing to study and visualize a complex issue from different perspectives (see for instance (Fenwick, Edwards, 2010) for the application to educational research). Therefore, this theory was suitable to provide a conceptual framework for the study and to inspire the methods we have used to map the tensions in their contexts.

Since the didactic perspective is rarely used to address the issue of today's lack of well-being of teachers, we have selected the data where didactics plays a central role, looking at these cases to identify and highlight didactic aspects that can be causing distress in teachers, and to see how teachers react within the realm of didactics.

Based on the results of this study, an inspirational toolkit is being developed for teacher education and the initial guidance of starting teachers. The toolkit positively aims at empowering teachers with tools allowing them to recognize, identify and handle tense issues in their teaching practice (Ardui, Frenssen, Tamassia, 2024).

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Jimmy H.M. van Rijt (Tilburg University)

Rethinking the place of grammar in L1 education: from being intrumental to being inherently valuable

Knowledge about Language (KaL) is a foundational component of L1 language education across the globe. Within KaL, the domain of grammatical or syntactic knowledge, encompassing understanding the form, meaning, and usage of sentences and phrases, holds a central but occasionally contentious position. Current discussions on L1 grammar instruction are predominantly driven by the aspiration to enhance students' literacy development, aligning with the communicative shift in mother tongue education. This evolution is substantiated by high-quality research that underscores the positive impact of contextualized grammar teaching on students' writing proficiency. Nonetheless, there exist other substantial and intriguing rationales for the teaching of grammar that have received limited attention in educational discourse and curriculum deliberations: (1) The Inherent Value of Language: Language is a fundamental part of human existence, and it is imperative that L1 speakers possess a profound understanding of how their language operates, transcending the confines of literacy development. (2) Insight into Cognitive Processes: Grammar instruction provides valuable insights into the workings of the human mind, shedding light on the intricate cognitive processes involved in language comprehension and production. (3) Enhancing Reasoning and Critical Thinking: Teaching grammar can be harnessed as a tool to foster students' analytical reasoning and stimulate their critical thinking abilities, augmenting their cognitive and problem-solving skills.
These rationales for teaching grammar extend beyond the realm of literacy development and emphasize the broader conceptual significance of grammatical knowledge. This paper delves into these compelling arguments, substantiated by empirical evidence from recent research, and advocates for their increased prominence in curriculum discussions concerning grammar education. By broadening the perspective on the role of grammar in L1 language instruction, this paper seeks to encourage a more comprehensive and inclusive approach to grammar teaching that accounts for its multifaceted impact on language and cognitive development.

Joris Van Doorsselaere (Ghent University)

Part-time doctoral research on subject didactics: Reflections on teacher agency and content selection

Recently, and seen through the lens of powerful knowledge as an idea (Young, 2009; 2013), there is a growing call to bring academic disciplines and related school subjects closer together. Simultaneously, much has been written in the literature about bridging the divide between educational research produced at universities and actual classroom teaching (Biesta, 2007; Levin, 2013). From an international perspective, it has long been a practice in institutions of higher education to connect what happens on the work floor to the training and research in that profession, for example via doctoral programmes. Such initiatives are often referred to as professional doctorates. For teachers or school leaders, they are mainly labeled as educational doctorates.

In the present, the design of educational doctorates can differ depending on the national context. In the Netherlands, for example, various initiatives have been set up in recent years that seem to coincide with such educational doctorates. More specifically, and in regard to the idea of powerful knowledge, van Boxtel and van Drie (2018) developed a theoretical model that attempts to make disciplinary knowledge of the historian both tangible and manageable for teachers (Chapman, 2021). In doing so, they relied on active history teachers during a part-time doctoral programme to strengthen the model with empirical data gathered in the field during classroom research, thus recontextualising specialist knowledge with care for the teachers' perspective and practice, and taking in mind the relevancy of such knowledge for students. As such teacher research is closely related to subject didactics (Hudson & Meyer, 2011), this strategy seems to be in line with the plea of Gericke et al. (2018) for empirical micro-studies focusing on the triadic interplay between content, teachers, and students in the light of powerful knowledge.

In this respect, funding was allocated in 2020 at Ghent University in Flanders (Belgium) to set up doctoral research for active history teachers. Nevertheless, it lacks a research tradition for this particular type of research in Flanders. Moreover, while there is a growing interest in subject-specific research in Europe (Ligozat, 2023), Flanders seems to lag behind. This paper explores my perspective as a teacher in terms of agency and makes a plea that doctoral research conducted by active teachers has the potential to contribute to the question of what powerful knowledge exactly constitutes.

Machteld Vandecandelaere, Virginie Lemmens, Leonie Vanhove, Rushda Kaleem, Nafen Zhou, Jan Sermeus (KU Leuven)

Teaching sensitive and controversial issues: a cross-disciplinary review of the literature

Teachers around the world teach sensitive and controversial issues (SCIs). SCIs have always existed. However, tension increases with increased diversity in the classroom and with raised critical consciousness and activism in society (i.e., wokeness). SCIs are not characteristic for one domain or discipline. In soft science education, topics may be sensitive when it appeals to students' personal life, their (mental) health or their personal or group identity (Boysen et al., 2018), e.g., topics related to suicide, eating disorders or gender identity. Issues may also raise controversy, referring to "questions of public policy that spark significant disagreement" (Hess, 2009, p. 37), e.g. talking about ethnic or religious diversity. In soft science education, SCIs have been studied in a large diversity of school subjects, such as history (Kello, 2016), citizenship education (Jerome & Elwick, 2020), or psychology (Boysen et al., 2018).

In hard science education, topics that raise ethical, political or moral questions may induce tension, e.g., discussing whether nuclear energy should be used to combat climate change. These topics are often referred to as socio-scientific issues (SSIs) (Chen & Xiao, 2021). Additionally, science teachers are faced with teaching so-called societally denied science (SDS) (Borgerding & Dagistan, 2018), i.e. topics that are considered as established in science but are denied by groups in the population, (e.g., evolution theory, the origin of the universe, or the working of vaccines).

This overview highlights how research on SCIs is fragmented across disciplines. An exchange between teachers and researchers from different subjects however has the potential to provide a rich basis for

future research and professional development. A common language, captured within a cross-disciplinary framework is therefore indispensable.

In this review study, we answer the following question: How do system dynamics, identity aspects, and topic nature contribute to classroom tension when teaching sensitive topics in secondary education?

Methods: We conducted a systematic review following the PRISMA-guidelines. To ensure the quality and reliability of the search protocol, every step in the review process is completed with at least three authors. Descriptive and interpretative coding was followed by an inductive thematic analysis. The three frameworks used for deductive coding concern Bronfenbrenner's ecological system theory (1979) (system dynamics), Biglan's (1973) categorization of disciplines (topic nature) and Schwartz et al. (2011) domains of identity.

Outcomes: The database of 363 articles covers a diverse range of topics spread more or less evenly between hard and soft disciplines. The most represented disciplines are biology, ecology, history, political science, and sociology. Preliminary results indicate that (1) context outweighs the topic in generating tension, (2) diversity in identities affects tension dynamics, and (3) tension spans all subjects, but particularly soft and applied topics linked to real-life scenarios.

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Henry Ward (University of London College), Lena Almqvist Wiksell (Mälardalen University), Dohuyn Jang (University of London College), Yujing He (University of Helsinki), Paavo Ikonen (University of Helsinki), Annelie Johansson (Karlstad University)

Boundary Negotiation and Pedagogical Strategies in Literacy, History, and Geography Education: Expert Teachers' Integration of Migration Concepts with Intercultural and Powerful Knowledge

The classrooms of expert literacy, history and geography teacher negotiate the boundaries (Bernstein, 2000) set by powerful knowledge about the concept of migration and conditions set by intercultural content knowledge. Expert teachers are individuals who have significant subject matter knowledge and pedagogical knowledge (Shulman 1987). In the construction of schemes of work and school-based curriculum in expert teacher classrooms, adjustments are made to the selection, ordering and emphasis of specific concepts so that they reinforce the boundaries that literacy, historical or geographical knowledge expects in the organisation of a curriculum where the concepts of migration are explored. At the same time, expert teachers expect students in their class to impose powerful knowledge on to forms of intercultural content knowledge, to transform the use of the powerful knowledge into explore concepts of equity and multi-lingualism for example. The study draws on Bernstein's concept knowledge discourses and the pedagogic device (2000) to describe how teachers recontextualise and evaluate the knowledge of their students. The study intends to shed light on how teachers select and order their curriculum in relation to powerful knowledge and how expert teachers evaluate the knowledge of their students when the concept of migration in a literacy, geographical or history classroom is applied to an intercultural content knowledge concept, such as multi-lingual competency. As a result, this study provides thick descriptions as a source of text to support professional discussions between history and geography teachers respectively to draw on when applying their subject areas to intercultural content knowledge concepts.

Amna Khawaja, Mikko Puustinen, Jenni Marjokorpi (University of Helsinki)

Thinking with Bernstein's pedagogic device: the role of teachers

The presentation discusses teachers' role in the processes trough which knowledge is recontextualised for educational purposes. In Bernstein's (2000) original framework, the agents involved in recontextualisation are, for example, state officials, politicians, education departments, and textbook authors, who struggle for the power to define curricula. A well-founded case has recently been made that teachers should also be seen as agents of recontextualisation (Khawaja & Puustinen, 2022; Kitson, 2020; Nordgren, 2021). This resonates with the North European didaktik tradition, in which teachers have traditionally been understood as active agents who make pedagogical and curricular decisions. Yet these decisions take place within institutional and societal frames (e.g. Gericke et al., 2018), can also be unintentional or unsuccessful (Khawaja & Puustinen, 2022), and are guided, at least to some extent, by more or less conscious beliefs (e.g. Priestley et al., 2015).

By drawing from empirical data from England, Finland and Sweden as well theoretical insights, we present a revised version of Bernstein's pedagogic device. The main contribution of the revised device is acknowledging the active role of teachers and the interplay between teacher's knowledge base and different kind of constraints or possibilities of varying educational contexts.

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Emma Newall, Alexis Stones (University College London)

The Tree as a tool for exploring evolution and existential concern in cross-disciplinary education
Abstract for (Workshop)

Cross-curricular and interdisciplinary approaches to teaching are generally held to be a positive, worthwhile endeavour for teachers but, in practice, there is little opportunity in lower and upper secondary schooling to plan and teach collaboratively across subject areas. If we are to help pupils respond to profound, complex and challenging questions that humans encounter, then we must draw on a number of forms of knowledge, disciplines, and diverse ways of understanding the world. Initial Teacher Education (ITE) in England presents the opportunity for student teachers to explore the possibilities of, and constraints within, cross-curricular collaborative teaching and learning. Religious Education (RE) and science are two areas of knowledge sometimes that are perceived in polarised terms and are, more significantly, subject to socio-cultural and affective dimensions for the individual and community (Stones and Fraser-Pearce 2022). The two subjects combine to provide a platform for the exploration of questions that are fundamental to understanding what it means to be human, how we can make sense of our world and our place in it. Our study draws on the notion that Bildung-informed didaktik brings together the relationships between content, teacher and student with an understanding that bildung is possible through a meaningful encounter with pedagogical content. Specifically, Klafki's categorial bildung, which depends on the inclusion of 'epoch-typical key problems', presents opportunities for deeper connection with humanitarian and existential issues that lead to bildung (Bhladh et al. 2018).

The context of our study is evolution education in biology and RE. We consider the tree as both symbol and metaphor. We have used the tree as a heuristic for dealing with questions of existence that evolution may provoke and are often discussed in RE, but far less so in science education. There is evidence that evolution may stimulate existential concern in a similar way to climate change education. The tree is therefore explored as a pedagogical tool to approach concerns regarding more daunting evolutionary concepts, such as extinction and competition, challenges to hierarchical taxonomies of life, as well as the thorny issue of human origins and our relationships to the more-than-human world.

In this workshop you will hear about how our research backgrounds, in psychoanalytical analysis of teachers' attitudes to teaching evolution (Newall and Reiss 2023) and epistemic literacy in relation to teaching and learning in RE (Stones and Fraser-Pearce 2022), informed this 4-year cross-discipline collaboration. Building on this collaboration in ITE for science and RE student teacher, we reflect on the process and some of the outcomes for student teachers taking part in an interdisciplinary workshop focusing on 'the tree', exploring disciplinary and personal attitudes and assumptions about evolution.

Student teachers used embodied and mindful practices to express emotional, ethical, spiritual and scientific dispositions to the tree while considering symbolic understandings across cultures, faiths, narratives, and aesthetic traditions, while allowing personal concerns to be shared. Student teachers produced reflective writing/drawing accounts about this process and planned collaboratively across subjects to address ethical and existential questions in science and RE that relate to a Bildung-informed interdisciplinary didaktik .

Our analysis of the student teachers' pedagogical material and personal reflections has informed a Bildung-informed interdisciplinary didaktik framework for ITE that is alert to the importance of transformation of content and the formal and experiential nature of teacher preparation that acknowledges the position of the individual teacher and student in relation to the nature of the interdisciplinary content.

Participants will explore the activities of the student teacher workshop for themselves. and then reflect on student teachers' responses through the analytical tools based on bildung–informed didaktik that we have developed. We will reflect together on the implications of our analysis and participants' findings, and explore how these relate to our own contexts. While our collaboration has allowed us to examine student teachers' experiences of thinking about how they can help young people navigate complex questions prompted by a collaborative interdisciplinary space through, we will also consider the impact on our own practice and what ITE can learn from an interdisciplinary collaboration.

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Niklas Gericke (Karlstad University)

The role of subject specific education and powerful knowledge in sustainability education

In this session I will discuss the role for school subjects and their constituting curriculum in the era of the Anthropocene. The world has entered a new geological era, the Anthropocene, were humans are the supreme transformer of the natural world. To mitigate and to adopt this change of living conditions, policy has launched the idea of education for sustainable development (ESD) as a mean to empower students in line with sustainability. In this quest, a reorientation can be seen in education away from traditional disciplinary content knowledge towards action. Education from an ESD perspective is aimed to develop students with the necessary competence for taking action, i.e. action competence (Gericke, 2022). The reason for this turn is that extensive research shown knowledge not being enough to influence people's actions towards a more sustainable way of living. The question then arising is what role there is for powerful knowledge, i.e. disciplinarily subject specific knowledge, in a curriculum no longer aiming for disciplinarily excellence, but action competence? Hence, a conclusion could be to dissolve the school subjects and their borders. However, in this session I will argue for the need to foster deep subject specific knowledge, to identify and cross these boarders. I will discuss the need of a curriculum in which subject specific education of different school subjects collaborate in cross-curricular

teaching (Sund & Gericke, 2020). Only if disciplinary traditions of the different school subjects together provide their perspectives, it becomes possible to develop students' action competence for sustainability.

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Anatoli Rakhkochkine (Friedrich-Alexander-University of Erlangen-Nürnberg)

Platformisation in Education and the Emergence of Transnational Didactics

In recent years, a growing body of comparative research on teaching, learning, and didactics has been published (Hudson & Meyer, 2011; Hallizky et al., 2016; Ligozat et al., 2023). This research has examined national traditions in didactics, explored innovative approaches within those traditions, and addressed issues related to harmonization and the travelling of concepts in didactics. Despite the continued fragmentation among national and regional traditions of teaching and learning, there is a noticeable trend toward universalization and even standardization of (subject-specific) didactic approaches and teaching practices. This trend is driven by factors such as international student assessment studies, processes of lending and borrowing, globalization in the production of teaching materials, internationalization in teacher education, and international teacher mobility. One of the recent trends in education, which has gained momentum during the COVID-19 pandemic, is platformisation. This paper explores how different national and cultural traditions in didactics are negotiated and transformed within transnational virtual spaces of educational platforms. It is based on a theoretical analysis of research into national traditions of teaching, learning, and didactics from a comparative perspective, particularly focusing on transnational curriculum and didactics and platformisation in education. The paper also explores the possibilities for empirical research by examining collaborative projects in eTwinning (a European platform for co-operation of schools and institutions of teacher education) developed and implemented by school teachers or teacher education students in different countries.

Anette Sosna, Jan Scheller (University of Greifswald)

Interdisciplinary reading processes in the subjects German and History

Students of all school types are involved in a wide range of subjects and deal with a wide variety of tasks. In this context, the handling of texts and other media is central. The question arises to what extent the linguistic and subject-related requirements associated with this are similar or different from each other. Therefore, we choose an interdisciplinary comparative approach and ex-amine reading and

interpretation processes from the perspective of German and history didactics. Specifically, we ask to what extent interdisciplinary and subject-specific operations can be identified when reading and interpreting literary and historical texts.

Research on reading processes is one of the central research areas in the subject German, which functions as the lead subject in the promotion of reading competence. When reading non-fictional texts, competences are promoted which are also used in other subjects (such as history) (e.g. reading strategies, word explanations, text analyses, etc.). Reading processes for non-fictional texts can therefore be attributed in part to domain-unspecific reading processes. The reading of literary texts, on the other hand, requires, among other things, a text-type-specific handling of meaning assignments that go beyond the meaning of words (Leubner & Saupe 2008, Sosna 2023). In history, too, the reading and interpretation process has been modeled as an interweav-ing of domain-specific and domain-unspecific processes (e.g. van Driel et al. 2022, Scheller et al. in press).

To identify reading and interpretation operations as broadly as possible, we use an expert-novice design. Literature and history professors are chosen as experts. In contrast, middle-school stu-dents (8th grade) will be researched as novices. The test persons receive a literary text on the first day of the study and a historical text on the second day, whereby a similar text type and a similar topic are being selected. In addition to the type of text the tasks in particular initiate subject-contoured reading processes. Therefore, different tasks are used for reading the literary and the historical text, which are oriented towards the respective subject-specific theories of interpreting texts. In a mixed-methods-design we use eye-tracking (e.g. Duchowski 2007), an audio recording of the orally solved task and a qualitative interview afterwards (Beatty & Willis 2007).

The operations used in reading and interpreting will be identified based on the recorded and tran-scribed interview data by means of structuring qualitative content analysis (Mayring 2010) in a deductive-inductive approach. Subsequently, the extent to which correlations between the quan-titative eye-tracking data and qualitative interview coding emerge will be examined (e.g. Van Gog et al. 2009).

With the presentation, results of the pilot study will be presented and discussed with regard to both methodological and content-related implications for the acquisition of interdisciplinary and subject-specific reading and interpretation skills at school. Discussing the first result of the initial phase of the study is an important contribution to the research design and the further approach to the main study.

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Silke Sterck, Lies Vanden Broeck, Marion Crauwels (KU Leuven)

A comparative analysis of virtual and wet research laboratories in secondary school students in Flanders

In biology education, wet research laboratories are widely used as they provide a powerful way for students to learn through inquiry, which is important to enhance scientific literacy in students (Hofstein & Lunetta, 2004). Both inquiry for understanding of scientific concepts as well as inquiry in terms of skills are included (Burns et al., 1985; Hofstein & Lunetta, 2004). These skills include science process skills such as defining research questions and hypotheses, identifying variables, interpreting data, while scientific technical skills refer to laboratory practical skills. Borgerding et al. (2013) highlighted that despite the impact of biotechnology on society, wet research biotechnology laboratories are not prominent implemented in secondary education curricula in Europe. Virtual laboratories might provide an alternative to overcome the identified constraint of the management of biotechnological equipment and materials.

Virtual laboratories comprise a wide range of computer simulations within a virtual laboratory setting with varying levels of interactivity and freedom of inquiry (Lisborg, 2021).

Research revealed that virtual laboratories with 3D Desktop - natural user interfaces technology and narratives can enhance cognitive learning outcomes and motivation of university students (Chan et al., 2021; de Vries & May, 2019; Yap et al., 2021).

One of the aims of this research is to contribute to the field by examining the impact of a virtual research Crime Scene Investigation (CSI) laboratory with 3D Desktop - natural user interfaces technology on students' development of science process skills and perception of the learning environments, in comparison to a wet research CSI laboratory. Contextualization of both learning environments includes the implementation of metacognitive activities as well as a narrative (Hofstein & Lunetta, 2004). In addition to a similar structure, both laboratories will apply a guided inquiry-based learning approach, covering identical subjects and inquiries. Approximately 120 12th grade secondary school students in Flanders will perform the adjusted virtual research CSI laboratory (Labster), another 120 students will perform the wet research CSI laboratory. Students will be required to complete a pre- and posttest questionnaire on science process skills (Burns et al., 1985) and a post questionnaire on perception of the learning environment (Yap et al., 2021).

Preliminary results will be presented during the conference.

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Jim Hordern (University of Bath / University of Plymouth), Johan Muller (University of Cape Town), Michael Uljens (Åbo Akademi University), Zongyi Deng (University College London)

Subjects, disciplines, and areas of learning: comparative perspectives on the challenges of curriculum-making (Symposium)

The relationship between disciplines, subjects or areas of learning, the curriculum and the professional knowledge of teachers is a central problematic for curriculum theorising, arguably in all its traditions. The notion of curriculum-making, if seen multi-level activity undertaken in all education systems, is increasingly seen as a useful lens through which the problematic can be explored (see e.g. Priestley et al. 2021). However, curriculum-making needs sound guidance, and this arguably requires robust inquiry into the structure of disciplinary forms and their relationship with subjects and areas of learning. In turn, a focus on structure evokes discussion on what constitutes valid disciplinary procedures, systematic, substantive and syntactic knowledge, and indeed on the relationship between "knowledge" and "content" in any given discipline or subject. These discussions are shaped inevitably by internal debates within disciplines and subjects, often resulting in terminology which is specific within those communities, but lacks resonance in others. Curriculum-making thus still lacks a conceptual terminology that can transcend the specifics of given subjects and disciplines, account for the multifaceted relations involved, and develop common cause across some of the different national and transnational traditions of educational thought. There is an absence of a robust theoretical discourse by which we can better understand the internal structure of disciplines and subjects, how these structures are comprised of their various components, and what the implications might be for curriculum theorising and the professional knowledge of teachers.

Nor should a straightforward relationship between discipline, subject and curriculum be assumed. As previous work has demonstrated (e.g. Stengel 1997; Yates and Millar 2016) the relations between disciplines and subjects are multivarious and historically contingent, ranging from the close, linear and hierarchical to a more distant or ambivalent connection, and with the development of new subject forms and integrated areas of learning (e.g. in nations such as Scotland, Wales) the relations become more complex still, often involving processes of recontextualising and recombining elements of different knowledge forms to constitute a new entity to meet the expectations of policy-makers, educators or education systems. A highly integrated or weakly classified area of learning runs the risk of

erasing connections to trusted forms of knowledge and understanding, but may be advocated on the grounds of relevance and accessibility to students. More open and lightly specified curriculum frameworks, that offer teachers considerable discretion in the selection and transformation of knowledge into content, arguably require further deep and nuanced teacher expertise - teachers need to have the capability to recontextualise or engage in didactic transformation to ensure that content is appropriate to their pedagogical process and the needs of their students. It is acknowledged that different traditions of educational thought approach these problematics differently, and thus a comparative perspective is beneficial.

The papers in this symposium will concentrate on the development of a more robust theoretical lens for the relations between disciplines, subjects or areas of learning, curriculum and the professional knowledge of teachers, arguing that there is value in continuing to pursue overarching curriculum theorising that can contribute to guidance for the curriculum-making role of teachers, and indeed other agents involved in shaping the curriculum in different jurisdictions. The symposium will aim to address some of the following questions:

- How can the relationship between disciplines, subjects/areas of learning, curriculum and the professional knowledge of teachers be more fully conceptualised in ways that can helpfully contribute to the specific internal discussions of disciplinary and subject communities and take account of varied traditions of educational thought?
- How are these relationships manifested in different national contexts, and with what implications?
- Can deliberations on the relationship between these knowledge forms provide a substantive language that can provide robust guidance for curriculum-making and therefore provide a resource for teacher preparation and ongoing professional development?

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Marleen Evers, Jan Elen, Machteld Vandecandelaere (KU Leuven)

Assessing scientific reasoning and argumentation in secondary psychology education

Scientific Reasoning and Argumentation (SRA) can be defined as the ability to understand and appropriately use scientific concepts, theories, methods, and findings to solve or explain problems in a particular discipline (Fischer et al., 2014). According to Fischer et al., SRA is a multidimensional construct consisting of eight nonsequential epistemic activities: problem identification, questioning, hypothesis generation, artifact construction and redesign, evidence generation, evidence evaluation, drawing conclusions, and communication and scrutinizing. While the constituting elements of SRA are cross-domain, SRA have a strong domain-specific component. The epistemological characteristics of a particular (sub)discipline shape and give substance to SRA. Given the importance of SRA in education,

there has been considerable research on SRA, especially in the hard sciences and history and in the context of conducting empirical research. This study focuses on SRA to explain scientific psychological phenomena without actual engagement in research.

In an exploratory study with secondary school psychology teachers (n=15), we identified the assessment of SRA as a major challenge in teaching SRA in psychology (Evers et al., 2023). Specifically, teachers wonder how to identify and use criteria to assess students' SRA in subject psychology. These difficulties in assessing SRA seem related to how teachers think about psychology as a scientific discipline. The present study builds on this finding and empirically investigated the relationship between teachers' epistemological beliefs about psychology as a scientific discipline for both the determination and the use of assessment criteria for SRA in psychology. Participants are psychology teachers in upper general secondary education in Belgium (Flanders) (n=20) and in the DR Congo (n=11). Teachers' epistemological beliefs were measured using the Epistemic Thinking Assessment of Barzilai and Weinstock (2015), as adapted to the context of psychology by Klopp and Stark (2022). In addition to teachers' epistemological beliefs, teachers' subject-specific knowledge about motivation theories was a variable of interest. The SRA task, for which teachers determined criteria, requires students to evaluate and weigh the quality and appropriateness of different psychological theories on motivation as to reach a justified conclusion that may explain a person's behavior. Five student responses of varying SRA quality were simulated by the researchers. Teachers were asked (1) to rank the different responses, (2) to determine assessment criteria for the task, and (3) to assess another set of student responses, this time using assessment criteria provided by the researchers. All three parts were followed by a semi-structured retrospective interview. At the time of submission, only preliminary results of the Flanders data regarding the nature of the assessment criteria, can be shared.

A content analyses suggests 4 patterns of assessment criteria: comprehensive, argumentation, formal epistemic, and procedural. Less than half of the teachers (n=8) assesses SRA using process criteria, argumentation criteria as well as epistemic criteria (the comprehensive criteria pattern). These teachers consider different activities involved in SRA (process criteria), characteristics of a good theory choice (epistemic criteria) and the quality of the argumentation (argumentation criteria). Teachers who formulate procedural criteria (n=6) only consider process criteria leading to more stepwise criteria. In the argumentation criteria pattern (n=4) teachers solely focus on the quality of the argument. In the formal epistemic pattern, teachers (n=2) solely consider epistemic criteria. Teachers' knowledge of motivational theories was very low ($\bar{x}$=3.5 out of 10). The comprehensive criteria pattern is associated with higher content knowledge ($\bar{x}$ = 4,375), and a procedural pattern with lower content knowledge. Preliminary results seem to indicate no association between the pattern of assessment criteria and teachers' epistemological beliefs, raising doubts about that relationship but also about the specific instrumentation.

Mikko A. Niemelä (University of Helsinki), Kristian Niemi (Karlstad University), Eero Salmenkivi (University of Helsinki), Alexis Stones (University College London)

Powers of knowledge in secondary religious education curricula of Sweden, England, and Finland

What might the powerful knowledge of religious education (RE) be; what knowledge and abilities does RE provide to lower secondary education pupils? The question is posed through the study of three

contexts: England, Sweden and Finland. The three iterations of the subject are similar enough to compare – _yet different enough for the character of each to emerge when they are juxtaposed and "mirrored" in each other (niemi, 2016, 2021). This comparative approach (see e.g. Schweitzer et al. 2020; Fraser-Pearce and Frazer 2023 in press) will allow us to explore the research question of what powerful knowledge in religious education entails. Exploring what, in each context, seems to be the powerful knowledge of the subject is simultaneously an exploration of the raison d'etre of RE as a subject.

Research process: Swedish, English and Finnish lower secondary curricula were studied via mixing qualitative content analysis (Elo & Kyngäs, 2008; Gläser-Zikuda et al., 2020; Mayring, 2015) and thematic analysis (Braun & Clarke, 2006, 2022; Terry et al., 2017). Young and Muller´s (2016) conceptualisation of powerful knowledge is used as the theory to guide deductive content analysis. In the analysis process, the data were first categorised and coded qualitatively and then compared with quantitative analysis. The categories formed in the analysis are: 1) capabilities of ethics, values and life questions, 2) critical thinking, 3) developing an understanding of societies, 4) intercultural competence, 5) knowledge about religions and worldviews, 6) knowledge about the powerful, and 7) personal development. These were further grouped into clusters.

Preliminary results: The three curricula have different emphases on what powers of knowledge are considered most worthy by the curriculum makers and how the purpose of RE as a school subject is framed. The Finnish curriculum emphasises students´ personal and ethical development. As the prevalence of 'knowledge about religions and worldviews' is clearly smaller than in the Swedish and English cases, the Finnish RE subject can be considered as a life skills subject.

The English curriculum has the strongest emphasis on academic knowledge which is evident through the prevalence of categories of 'knowledge about religions and worldviews' and 'knowledge about the powerful'. The English curriculum has only a minor focus on students 'personal development', however, it stresses the development of students 'critical thinking'.

The Swedish curriculum concentrates relatively strongly on the categories of 'intercultural competence' and develop an understanding of societies'. Furthermore, the relatively high prevalence of 'knowledge about religions and worldviews' paints a picture of the Swedish curriculum as a curriculum that aims to construct neutral knowledge and capabilities to live together in a plural society consisting of various cultural groups.

Anke Wegner (University of Trier)

Citizenship Education in Basque and French Language Classes in Northern Basque Immersive Schools: A case of powerful knowledge and epistemic quality

The paper discusses findings from the *EduLing* project which is concerned with citizenship education in language teaching and learning in France, Austria and Germany. It is an international comparative study on three teaching-learning settings: language teaching and learning in minority schools, in CLIL and mainstream classes. Although citizenship education is repeatedly considered in the policy discourse on language teaching and learning in Europe, there have been hardly any studies on citizenship education in this context as a didactic category to date. The project therefore aims to empirically reconstruct selected European concepts and practices of citizenship education in language teaching and learning

and addresses the research question of the extent to which the mentioned language teaching-learning settings contribute to citizenship education / éducation à la citoyenneté (Ravez 2018) in three different European countries.

The paper focuses on the reconstruction of teaching and learning practice focuses on the concepts of powerful knowledge and epistemic quality (Hudson 2018; Hudson 2022; Wegner/Hudson/Loquet, Monique 2022). in teaching and learning settings in the Northern Basque Ikastola The data from the Basque immersive schools promise profitable insights concerning the integration of citizenship education and language education based on powerful knowledge and epistemic quality. The pedagogical and didactic concept of the Ikastola, as the interviews and videography of classroom interaction show, is strongly characterised by interdisciplinarity, participation and student orientation and it aims at consistently promoting citizenship education and language education in the language classroom. The analysis of the teaching practice and the interview data furthermore shows that the epistemic quality of the content and the epistemic quality of the teacher-student interaction are not only interrelated; it is precisely their interplay that provides powerful knowledge and more equitable access to quality education for all. This concerns both citizenship education and language education in diverse, multilingual learning groups.

- The data collection and analysis include
- initial interviews with head teachers (problem-centred interviews, Maus 2018) in order to record the general framework conditions of the school and of teaching,
- initial interviews with teachers (problem-centred interviews) which offer a profitable access to the research field on a teaching-learning-specific level,
- videography of classroom interaction in order to adequately reconstruct the teaching and learning practice and the interaction of the participants with a focus on powerful subject and language knowledge and epistemic quality (Wegner/Hudson/Loquet 2022),
- interviews with teachers related to lesson sequences and concluding student group interviews (problem-centred interviews, Nohl 2017), in which core aspects of powerful knowledge, epistemic quality and the students' perspectives on them are discussed.

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Wouter Smets (Erasmus University Rotterdam / Karel de Grote University of Applied Sciences Antwerp)

The purposes of historical canons in multicultural history education

National canons of history sparked intense debate among historians over the last years, history educators have regularly shown concerns regarding these canons. The main arguments are that history is instrumentalized for political purposes, and that canons are incompatible with multiculturality. In this paper the cases of the Netherlands and Belgium (Flanders) are used to discuss these concerns. The aim is to gain a more complex understanding of the use of canonical discourse in the setting of history education. Banks' typology of knowledge in multicultural education (1993) provides a theoretical framework to understand and discuss the educational implications of canons, in particular in multicultural settings. He discerns five types of knowledge, all of which are needed in multicultural education to allow students to become critical thinkers who have the knowledge, attitudes and skills to help the nation close the gap between its ideals and its realities. The current study actualizes and reconsiders Banks' typologies of knowledge, and applies them to multicultural history education. Hence the canon debates in the low countries are contextualized from an international perspective of debates on canon and history teaching. It is argued that both national canons specifically intend to confront popular knowledges and historical myths with academic historiographic discourses. More particularly both canons seek to include discourses on minority groups and multiculturality, which may benefit the use of transformative knowledge in history education.

The canon debates show that the pitfalls of drawing a historical canon are multiple. The danger of inside-outside constructions is always present when canons are constructed (Grever & Stuurman, 2007). Yet I argue that a priori opposition to any form of canonization of the past is not needed. Opposition to any use of canonical discourse in history education neglects the essential role teachers have to fulfill in integrating this discourse into educational dialogue. It is the role of history teachers to navigate their students between the diverging epistemological qualities of the discourses they use (Nitsche & Waldis, 2022). History teachers do not simply transmit discourses, they use diverse types of knowledge to target a range of diverse goals in their educational practice by reading, discussing and interpreting them with students. Hence, it is their role to use diverse types of knowledge, from mainstream academic to transformative academic knowledge, and from personal funds of knowledge to popular beliefs. Therefore, a historical canon with a limited number of markers which is based on academic historiography can aid to realizing some of the most essential purposes of education, in particular in multicultural settings. Banks' typology of knowledges allows to gain a more complex understanding of the use of canonical discourse in history education. The examples from the Netherlands and Flanders illustrate how canonical discourse can seek to confront under-evidenced popular knowledges with academic historiography. Hence, when thoughtfully integrated into the curriculum a historical canon can fulfill the function of reference point. Moreover, elements of canonical discourse may support the socializing and subjectivizing functions of education. Debates about democracy, emancipation or justice belong to the core issues of history education, they cannot remain sterile debates about abstract concepts in the classroom but must be illustrated with concrete stories from the past or present. The introduction of specific discourse of transformative nature in the national or regional canons are interesting for multiple reasons. They are elements of transformative academic knowledge that might innovate school knowledge such as history textbooks, and teachers' interpretation of structural violence and racism. These powerful narratives that for decades remained out of interest of most educators in the low countries, incite history educators to explicitly reflect upon the socializing function of history education. They are elements of transformative academic knowledge that allow students to position themselves as conscious and moral individuals in the society in which they live. Moreover, canonical

discourse also allows to reflect upon subjectivation in history education. Space for negative identity is needed to allow those who are educated to become critical and self-conscious citizen of the society in which they live.

Annelie K. Johansson (Karlstad University)

Let's see if there are any cool ones: Students' Digital Multimodal Text Design in School Assignments

Against the backdrop of societal changes and technology development which leads to an increasingly digitalized world, the conditions for teaching and learning are challenged in concrete ways (Barton, 2009; The New London Group, 1996). The overarching aim for the PhD project that this presentation builds on, is to investigate, from students' perspectives, conditions for participating in assignments which involve multimodal literacy in digitalized classrooms at a Swedish lower secondary school. The project has a video ethnographical approach, and video data is constructed of recordings of four consecutive lessons in different school subjects, in repeated recording cycles in one class from year 7 – 9 during the years 2019 – 2022 (Nilsberth m.fl., 2023).

The overarching theoretical perspectives are New Literacy Studies (NLS) and multimodal social semiotics (Jewitt, 2006; Kress, 2010; The New London Group, 1996). NLS provides opportunities to investigate multimodal literacy and changes in social practices. With a multimodal social semiotic perspective, perspectives on literacy are given based on social background factors, discourse and contexts as well as meaning making and a focus on both detailed and overall aspects of communication. The video data are transcribed with methods for detailed, multimodal transcription (Jewitt, 2008) and analyzed in relation to use of communicative meta functions from ideational, interpersonal, and textual perspectives (Halliday, 1978).

This presentation aims to put light on students' participation in two school assignments, L1 (Swedish) and Art, with focus on students' design processes and their multimodal artefacts. Preliminary results show that the students' multimodal artefacts are characterized by a high degree of varieties of modalities. Also, the students become each other's resources both in terms of technical issues and the design choices. The analysis also show that the students orient themselves towards the school assignments and at the same time towards social relations with classmates which might include matters of identity and cultural knowledge. It indicates that participation in digital multimodal school assignments becomes a network of social interactions and a complex form of literacy(-ies) related to interdisciplinary as well as subject specific questions and also to multiliteracies and boarders to be crossed between (traditional) school literacy and students´ lifeworlds.

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Gabriel Bladh, Martin Stolare (Karlstad University)

Powerful knowledge, Didaktik and Interdisciplinary Perspectives: Considerations from a Practice-based Research Project

Johan Mueller points out how the knowledge turn in curriculum theory and the discussion around the concept of "powerful knowledge" has led to an unanticipated bridge between curriculum theory and subject didactics (Mueller 2022). The two perspectives are distinct and divergent from one another, but also connected. While curriculum research aims to identify curriculum principles (curriculum of), subject didactics wants to use the principles to develop teaching (curriculum for). As subject didacticians, we would like to present and discuss results from a research and practice partnership (RPP) project on migration in social studies (Stolare et al. 2022), years 4-6, a project that included aspects of such a theoretical bridge. Our purpose with this paper is twofold: It is first to contextualise central parts of the international discussion about different curriculum principles and secondly, to exemplify and discuss how teaching and knowledge practices, shaped by the development of a teaching module on migration, have evolved in the interplay between subject-specific and interdisciplinary perspectives.

In our theoretical background, we combined the perspective of powerful knowledge with Klafki's ideas about categorial Bildung and epoch-typical key problems (Bladh et al. 2018). In a design-inspired process of developing teaching about the phenomenon of migration, we started from a cross-curricular approach using models and perspectives from history didactics, time geography and social science. As researchers, we represented different disciplines (geography, history, civics) based on different knowledge structures and content focuses. This meant that an essential part of the work to develop the teaching module was to discuss how the subjects could interact when the perspective of migration was focused in connection with the selection and transformation of the content.

The ambition of the teaching module was to shed light on why people move and what enables and prevents migration. It became clear that it was relatively easy for the students to relate to migration biographies at the individual level. However, it was more challenging for them to understand how different social structures affect the opportunities to migrate. A starting point was that the students should gain a basic understanding of a phenomenon such as migration, they need to develop both an actor and a structural perspective. In the project, the structure-actor relationship became a unifying boundary object (Leigh Star 2010). In the paper, we present empirical examples from the project and discuss our approach in relation to subject-specific and interdisciplinary perspectives. Finally, we return to the question of curriculum principles, and how a focus on content can constitute a concretisation of the theoretical bridge building in a subject-didactic perspective.

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Alexander Hallet (University of Trier)

Shaping symbols – Shaping meaning – Shaping knowledge

The foundation of every discourse whether outside or inside the classroom, meaning the space where everyday as well as specialized knowledge is transmitted, used and generated in social interactions between students and teachers, is the symbolic representation of concepts, the semiotic shape of texts. I understand a text as a particular product consisting of a specific semiotic shape and a specific generic form and therefore as part of "discourse formations" (Foucault 1973: 272) – the sum of texts which equally represent and produce knowledge. To put it in the words of Nelson Goodman (1978: 1): "There is no world without word or symbols."

Regarding discourses in the classroom, I propose to differentiate between two types of epistemic quality: The first type is based on the idea of Wegner/Hudson/Loquet (2023: 55) which they call the "epistemic quality of the content". The second type refers to the way the content is represented semiotically, including socially conventionalized semiotic modes like spoken and written language, motion and motionless pictures, sounds or music as well as specific generic forms the content and the social interaction between agents are shaped by.

Accordingly, students a) must be able to deconstruct texts and their semiotic and generic structures in order to understand and adapt specialized knowledge of the disciplines and also everyday knowledge (reception). Furthermore, they b) must be capable of using various semiotic and generic forms in various social contexts, increasing their chances of achieving a certain (communicative) agenda (production). Similar to a multiliteracies approach, Claire Kramsch (2021: 5) defines such competencies as "symbolic empowerment", meaning the "power to construct social realities by creating and using symbols that give meaning to the social world."

Thus, transmissions and productions of powerful knowledge as defined by Hudson et al. (2023: 3) always contain semiotic and generic dimensions. A first dimension (knowing that) concerns knowledge about the fact that powerful knowledge is represented in genres, signs and symbols and knowledge about the way powerful knowledge is represented semiotically and generically.

A second dimension (knowing how) concerns the ability of make use of genres, modes and their semiotic resources in order to understand and read text, to adapt knowledge, but also to express oneself, to 'make world' and to contribute meaning in the sense of high epistemic quality. Wegner/Hudson/Loquet (2023: 57) speak of high epistemic quality as "creative use of complex individual linguistic repertoires in the classroom." I would like to shed light on the extension of such repertoires beyond linguistics and look at semiotic resources of all conventionalized modes, especially on the reception and production of (powerful) knowledge in multimodal texts that combine at least two different modalities. The number of multimodal texts has increased dramatically ("multimodal turn", cf. Bucher 2011: 123), especially

since all digital texts are multimodal texts. Therefore, I also like to focus on the impact of digitization on social interactions (Stalder 2016, Nassehi 2019) which enables people to enter new worlds of new symbolic forms, turning them into producers, not just consumers. This makes them experts in certain contents and the way that content is constructed and conveyed semiotically.

Uwe Krause (Fontys University of Applied Sciences, Tilburg, Utrecht University)

Powerful Knowledge and the Role of Curriculum Contexts on Teachers' Task Setting

Higher Order Thinking Tasks are considered to be key in respect of powerful knowledge and the development of knowledge of high epistemic quality. In our research we were interested in which ways the curriculum context the teacher is functioning has an influence on their task setting. A preliminary exploration showed that Dutch and German geography teachers in upper secondary hold comparable orientations towards good geography education, but contrary to the German teachers Dutch teachers barely set higher order thinking tasks (Krause et al., 2017). As every German state has an own curriculum, we limited the research area to North-Rhine Westphalia (NRW) in comparison to the Netherlands (NL).

We first developed a Geographical Task Categorisation Framework based on Bloom's revised taxonomy with five levels of thinking, to have a common language when talking about tasks in different contexts. The analysis shows, that in NL the focus lies on the Use of Thinking Strategies, where as in NRW more often Higher Order Thinking tasks occur (Krause et al., 2022). Subsequently, the comparison of the curriculum contexts based on Bernstein's classification and framing shows, that evaluative rules are important to understand the foci on certain types of tasks. The context of NRW emphasizes higher order thinking and how that has to be become visible in student's work. The Dutch context, however, accentuates that students can handle an outlined body of knowledge in defined settings, in other words inferential ability (Krause et al., 2021a). An analysis of the debriefing of tasks in Dutch lessons also shows, that there are barely tasks and debriefing questions at the level of (parts of) higher order thinking. Mostly there is "one correct answer", and limited chance to discuss a variety of possibilities, as only seldom does a "discursive gap" open (Krause et al., 2021 b).

In a last step we interviewed 50 upper secondary teachers in NL and NRW about their task setting for the topic "Global Food Issue" (which occurs in both settings) and about their orientations towards task setting. The results show that teachers' orientations on the curriculum, i.e., teachers' beliefs and values about the curriculum, do play a role in the type of tasks teachers apply, but that the evaluative rules of the curriculum context, i.e., the examination system, have a crucial influence on the teachers' task setting. During this presentation we would like to discuss the results and the importance of constructive alignment, i.e. consistency between curriculum goals and high-stakes examination, which according to us is of key importance to support teachers in achieving higher-order-thinking and powerful geography teaching.